

We claim:

1. A method for analyzing an image of a printed object to determine whether the printed image is a copy or an original, the method comprising:

determining whether a machine readable auxiliary signal is embedded in the
5 image, wherein the auxiliary signal is embedded at embedding locations using a set of two or more print structures that change in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structures such that the machine readable signal becomes more or less detectable; and

based on evaluating the machine readable auxiliary signal, determining whether
10 the printed object is a copy or an original.

2. The method of claim 1 wherein the set of print structures include a first color and a second color that change differently in response to a copy operation.

15 3. The method of claim 2 wherein at least one of the colors corresponds to an ink color that is out of gamut of a printer or scanner.

4. The method of claim 2 wherein a difference in luminance of the two colors changes in response to a copy operation.

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5. The method of claim 1 wherein the set of print structures include a first print structure having a first dot gain property and a second print structure having a second dot gain property; wherein the first print structure is more susceptible to dot gain than the second print structure in response to a copy operation.

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6. The method of claim 1 wherein a difference in luminance of the print structures changes in response to a copy operation due to a difference in susceptibility to dot gain of the print structures.

7. The method of claim 1 wherein the set of print structures include a first print structure having a first aliasing property and a second print structure having a second aliasing property; wherein the first print structure aliases differently than the second print structure.

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8. The method of claim 1 wherein the auxiliary signal is embedded by varying continuity of line structures.

9. The method of claim 8 wherein one print structure comprises a line segment in a first color, and another print structure comprises a line segment in another color.

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10. The method of claim 9 wherein the line segments of the different colors are arranged by varying between the first and second colors along a printed line.

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11. The method of claim 1 wherein the evaluating includes evaluating a frequency domain metric to detect changes in the print structures.

12. The method of claim 11 wherein the frequency domain metric is a radial frequency domain metric.

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13. The method of claim 11 wherein the frequency domain metric is used to evaluate changes in color of a print structure.

14. A storage medium on which is stored instructions for performing the method of claim 1.

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15. A method for creating an image to be printed on a printed object, the image being used to determine whether the printed image is a copy or an original, the method comprising:

embedding a machine readable auxiliary signal in the image, wherein the auxiliary signal is embedded at embedding locations using a set of two or more print structures that change in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structures such that the machine readable
5 signal becomes more or less detectable; and

creating a metric to detect the convergence or divergence from an image scanned of a suspect printed object to determine whether the suspect printed object is a copy or an original.

10 16. A storage medium on which is stored instructions for performing the method of claim 15.

17. A method for analyzing an image of a printed object to determine whether the printed image is a copy or an original, the method comprising:

15 determining whether a machine readable auxiliary signal is embedded in the image, wherein the auxiliary signal is embedded at embedding locations using a print structure that changes in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structure such that the machine readable signal becomes more or less detectable, the print structure comprising a color that
20 changes in response to a copy operation; and

based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original.

25 18. The method of claim 17 wherein the auxiliary signal is embedded by varying continuity of line structures.

19. A storage medium on which is stored instructions for performing the method of claim 17.

20. A method for creating an image to be printed on a printed object, the image being used to determine whether the printed image is a copy or an original, the method comprising:

embedding a machine readable auxiliary signal in the image, wherein the
5 auxiliary signal is embedded at embedding locations using a print structure that changes in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structures such that the machine readable signal becomes more or less detectable; and

creating a metric to detect the convergence or divergence from an image scanned
10 of a suspect printed object to determine whether the suspect printed object is a copy or an original.

21. A storage medium on which is stored instructions for performing the method
of claim 20.

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